

NATIONAL ENRICHMENT FACILITY

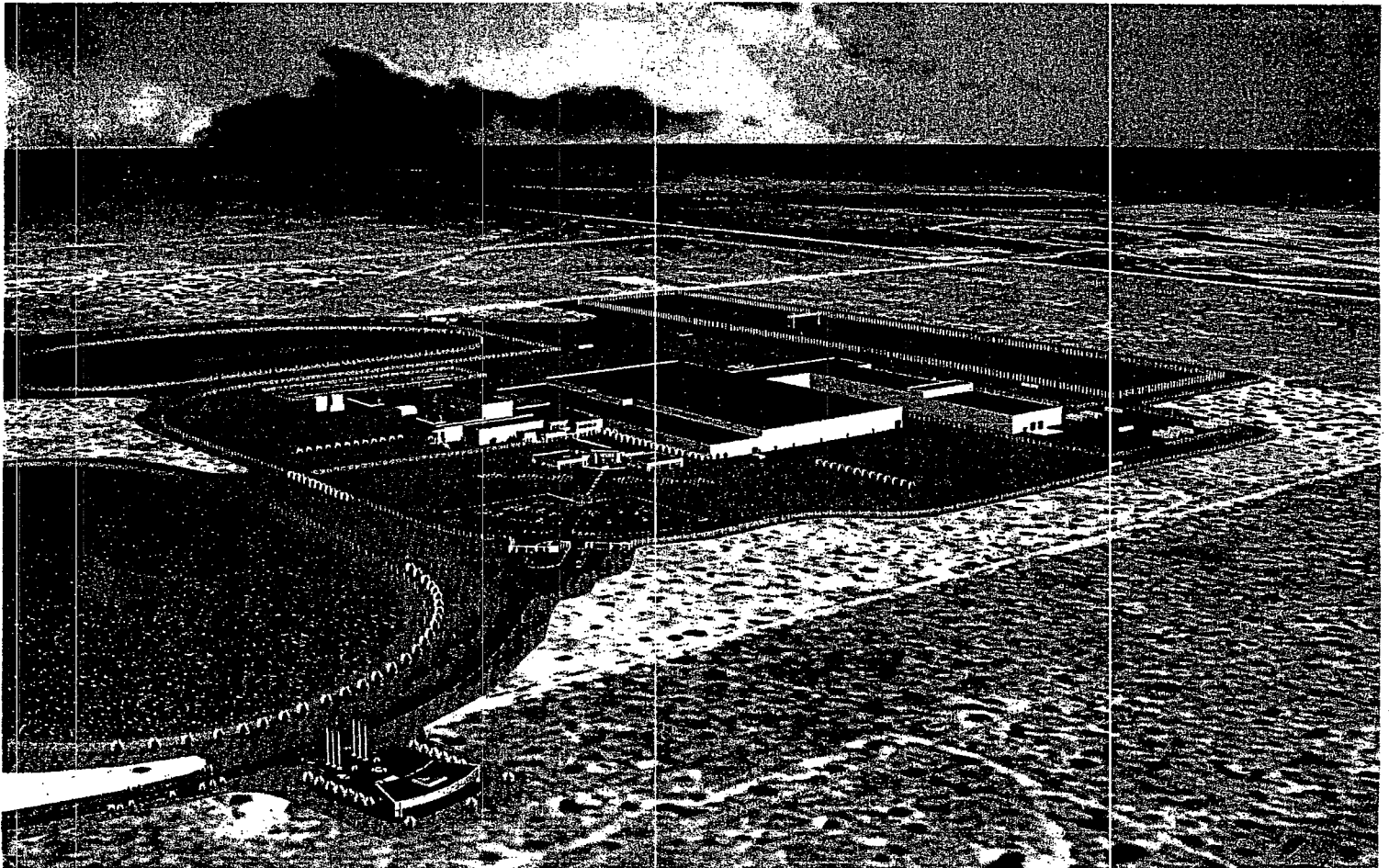
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EMERGENCY PLAN



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INTRODUCTION

Pursuant to 10 CFR 70.22(i) and 40.31(j), this is the Emergency Plan for the National Enrichment Facility located in Lea County near Eunice, New Mexico. The plan conforms to the Regulatory Guide 3.67, Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities, dated January 1992. This plan has been reviewed by the following offsite response organizations that are expected to respond in case of an accident in accordance with 10 CFR 70.22(i)(4) and 40.31(j)(4).

New Mexico Department of Public Safety

Eunice Fire and Rescue Services

Eunice Police Department

City of Hobbs Fire Department

Lea County

Lea County Sheriff's Office

Lea Regional Medical Center

These organizations stated their commitment to support, within their jurisdictional authority and/or resources, the facility in case of an emergency. Most of the comments received have been incorporated in the Emergency Plan being submitted as a part of the License Application. The remaining comments will be resolved as a part of the ongoing planning process. Copies of the comments received are included as Attachment 2 to this plan.

The Texas Department of Public Safety, Division of Emergency Management, understands the limited potential of a release and is in agreement that the New Mexico Department of Public Safety, Office of Emergency Management (OEM) is responsible for coordinating the emergency response. Because of the proximity of the facility to the Texas state border, Texas agencies are notified of a declared emergency. Notifications are made to the Andrews (Texas) County Sheriff's Department, the Texas Department of Public Safety, - Midland, the Texas State Operations Center - Austin, and the Texas Department of Health, Bureau of Radiation Control - Austin.

To manage an unlikely event requiring the use of this plan, the facility has procedures that serve to protect not only employees but also, through coordination with appropriate offsite Emergency Organizations (EOs), the facility's neighbors as well.

LES shall, in accordance with 10 CFR 140.13b (Amount of liability insurance required for uranium enrichment facilities), prior to and throughout operation, have and maintain nuclear liability insurance to cover liability claims arising out of any occurrence within the United States, causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive,

toxic, explosive, or other hazardous properties of chemical compounds containing source or special nuclear material.

The information documented in this plan includes: (1) a description of the facility, (2) a characterization of classes of credible emergencies that might occur, (3) a description of radiological and chemical contingencies for the class of emergencies, (4) designation of authorities and responsibilities of key individuals, (5) a description of specific response measures, (6) descriptions of equipment and facilities designated for use during radiological emergencies (7) a description of the methods for maintaining emergency preparedness, (8) a description of emergency records and reports, (9) a description of recovery and restoration measures, and (10) a commitment to comply with the Community Right-To-Know Act.

2.0 TYPES OF ACCIDENTS

Since the NEF operates with only natural and low enriched (i.e., no reprocessed) uranium in the form of uranium hexafluoride (UF_6), there are no radiological hazards associated with the operation that could likely result in any significant offsite radiation doses. The only significant impact to the public safety is that associated with the potential release of UF_6 to the atmosphere. The possibility of a nuclear criticality event occurring at the NEF is highly unlikely. To prevent or limit the impact of any chemical or radiological release, the facility has been designed with operational safeguards appropriate to a modern chemical plant. Systems are highly instrumented and abnormal operations are alarmed in the facility Control Room or locally.

2.1 DESCRIPTION OF POSTULATED ACCIDENTS

Postulated accidents are those events described in the Integrated Safety Analysis, that have, for the uncontrolled case, been categorized as having the potential to result in high or intermediate consequences. No exposure to offsite individuals is expected from any of the events, since multiple barriers are in place to prevent or mitigate such occurrences. The ISA examined a wide range of potential events, sequences and threats to the facility in its analysis. Only those credible events that indicated the potential for intermediate or high consequences for the uncontrolled cases are specifically identified in this section.

The potential exposures to workers would most likely be higher than those to offsite individuals and would be highly dependent on the workers' proximity to the incident location. All workers at the NEF are trained in the characteristics and potential hazards of facility processes and materials. Therefore, facility workers know the precautions to take to lessen their exposures to chemical and radiological substances in the event of an incident at the facility.

2.1.1 Postulated High Consequence Events

Postulated high consequence events are those events and sequences of events that have been identified through the ISA as having the potential, if not controlled by facility systems or operations, to lead to an environmental release of radioactive or other hazardous material that could require a response by an offsite response organization to protect the health and safety of the public. Incidents postulated as High Consequence Events have a very low probability of occurring.

2.1.1.1 Natural Phenomena

Analyses of potential accidents include the effects of natural phenomena.

As discussed previously, although the uranium feed material is radioactive, the primary consideration with regard to human health and safety is chemical rather than radiological. Thus, in the event of an accident, the chemical effects (impact of the hydrogen fluoride (HF) and the chemical toxicity of uranium as a heavy metal) are greater health and environmental concerns

than the amount of radiation that might be released.

2.1.1.1.1 Seismic

For the uncontrolled accident sequence, a seismic event which produces loads on the UF₆ piping and components beyond their capacity is assumed to lead to release of gaseous UF₆ with additional sublimation of solid UF₆ to gas. The UF₆ gas when in contact with moisture will produce HF gas.

For the controlled accident sequence, the mitigating measures are (1) seismically designed buildings (Separations Building, Blending and Liquid Sampling Area, Centrifuge Test Facility, CRDB, and TSB), (2) automatic trip off for the ventilation systems servicing these areas, except Centrifuge Test Facility, of the facility sensed by accelerometer, (3) limited building leakage paths to the outside environment except Centrifuge Test Facility by appropriate design of doors and building cladding. These mitigating measures are designed to contain the gaseous UF₆ and HF within the buildings and attenuate the release to the environment through small openings around doors and other small cracks and openings in building cladding.

These mitigating measures will reduce the consequences of seismically induced failures of UF₆ piping.

2.1.1.1.2 Tornado

The UF₆ Handling Area, Cascade Area, Blending and Liquid Sampling Area, CRDB, CAB, CUB, and TSB are designed to withstand tornado loadings including tornado generated missiles. The tornado parameters are based on a 100,000-year period of recurrence. This tornado has been designated as the design basis tornado for the NEF.

2.1.1.1.3 Flood

The only potential flooding of the facility results from local intense rainfall. Protection against flooding from local intense rainfall is provided by establishing the facility floor level above the surrounding roadways and providing a diversion berm and drainage channel to divert water from upland drainage areas. Final site grading will be established to direct runoff from local intense rainfall safely around plant structures.

2.1.1.2 Nuclear Criticality

No accidental criticality has ever occurred at a facility processing low enriched uranium. Achievement of criticality with low enriched uranium requires a precise combination of unlikely conditions and is not likely to happen accidentally. In addition, the NEF includes multiple design, administrative and engineered safeguards to prevent a criticality accident.

The TSB, Cascade Halls, CRDB, Blending and Liquid Sampling Area, and the UF₆ Handling

Area have been identified as the only areas within the NEF where a criticality could occur. Although a criticality event is considered highly unlikely, a hypothetical consequences analysis has been performed. The results of the criticality event analysis were compared to the values specified in 10 CFR 70.22(i)(1)(i). The ISA conservatively assumes a criticality event results in a high consequence.

A Criticality Accident Alarm System (CAAS) is provided to detect and alarm if a criticality event occurs in an area where uranium at or above the 10 CFR 70.24 limits is used, stored, or handled. If a criticality were detected, facility personnel would be assembled immediately in the Assembly Areas as required by in the Emergency Plan Implementing Procedures (EPIPs). Further, the emergency response and protective measures for an accidental criticality would fall within the guidelines of a Site Area emergency response situation.

2.1.1.3 Fires Propagating Between Areas

The TSB, Cascade Halls, CRDB, Blending and Liquid Sampling Area, and the UF₆ Handling Area have been identified as the only areas within the NEF where an uncontrolled fire propagating into these areas could result in a release of the UF₆ or uranium inventory.

For the controlled accident sequence, the mitigating measures are fire barriers which prevent propagation of fire in/out of areas containing uranic material.

2.1.1.4 Fires Involving Excessive Transient Combustibles

The TSB, Cascade Halls, CRDB, Centrifuge Test Facility, Blending and Liquid Sampling Area, UF₆ Handling Area, UBC Storage Pad and UBC Transporter have been identified as the only areas within the NEF where an uncontrolled fire involving excessive combustibles could result in a release of UF₆ or uranium inventory.

For the controlled accident sequence, the mitigating measures are administrative controls through the use of procedures and training associated with preventing severe fire exposure to systems or components of concern.

2.1.1.5 Heater Controller Failure

The initiating event is failure of a heater controller that causes either the Solid Feed Station heater or defrost heaters in Low Temperature Take-off Stations or the Blending Donor Station or Receiver Station heater or defrost heater to remain energized.

For the uncontrolled accident sequence, the cylinder over heats and the cylinder hydraulically ruptures due to the expansion of the UF₆. Upon cylinder rupture, the cylinder contents of UF₆ are released, locally exposing workers, and the UF₆ is subsequently released outside the UF₆ Handling Area or Blending and Liquid Sampling Area to the site boundary.

For the controlled accident sequence, the preventive measures are (1) fail-safe hard-wired high

temperature heater trip, and (2) redundant independent fail-safe capillary high temperature heater trip.

2.1.1.6 Over-Filled Cylinder Heated to Ambient

The event is initiated by overfilling a cylinder located in the UF₆ Handling Area or the Blending and Liquid Sampling Area.

For the uncontrolled accident sequence (secondary containment not credited), the over-filled cylinder is heated to ambient temperature with subsequent cylinder rupture. Upon cylinder rupture, the cylinder contents of UF₆ are released within the facility locally exposing workers and the UF₆ is subsequently released outside the building to the site boundary.

For the controlled accident sequence, the preventive measure for preventing overfilling is cylinder over-fill administrative control (cylinder over-fill prevented by verification of cylinder fill conditions once per shift).

2.1.1.7 Product Liquid Sampling Autoclave Heater Failure Followed by Reheat

The initiating event is failure of a Product Liquid Sampling autoclave heater followed by reheat. Solidification of UF₆ occurs in the sample manifold, which isolates the pressure trip. Upon system reheat, the sample manifold ruptures.

For the uncontrolled accident sequence, UF₆ from the sample manifold and the liquid UF₆ in the product cylinder are released to the Blending and Liquid Sampling Area locally exposing workers and is subsequently released outside the building to the site boundary.

For the controlled accident sequence, the preventive measures are (1) the autoclave vessel assembly integrity, (2) an HF monitor in the autoclave, and (3) an autoclave air pressure alarm that alarms in the Control Room notifying the operators of the abnormal condition.

2.1.1.8 Open Sample Manifold Purge Valve and Blind Flange

The initiating event is an operator error leaving the sample manifold purge valve and blind flange open. Upon liquid sample heat up and tipping of the autoclave, the sample manifold releases liquid UF₆ into the autoclave.

For the uncontrolled accident sequence, UF₆ from the sample manifold and the liquid UF₆ in the product cylinder are released to the Blending and Liquid Sampling Area locally exposing workers, and the UF₆ is subsequently released to outside the site boundary.

For the controlled accident sequence, the preventive measures are (1) the autoclave vessel assembly integrity, (2) an HF monitor in the autoclave, and (3) an autoclave air pressure alarm that alarms in Control Room notifying the operators of the abnormal condition.

2.2 DETECTION OF EMERGENCY CONDITIONS

2.2.1 Process System

Standard chemical facility safeguards are provided throughout the process and process systems (e.g., indications, alarms, and automatic shutdown systems). The major chemical hazard in the facility (leakage of UF₆) is controlled by operating the enrichment process at subatmospheric pressure.

2.2.2 Alarm Systems And UF₆ Release Prevention

Alarm systems that indicate abnormal operating conditions are provided in the Control Room for each of the Cascade Halls. Radio communications and Public Address (PA) audio communications with operators and supervisors in the operating areas provide the necessary detection and communication capacity to trigger a facility-wide alarm for protection of workers and the start of mitigation procedures for UF₆ release prevention.

If the main alarm systems are inoperable, radio communications are the next immediate avenue of activation of this Emergency Plan. Facility operating personnel provide nearly continuous surveillance of operating areas through routine inspections and observations. The high visibility of any significant UF₆ release and the strong odor of HF provide immediate identification methods for operator response to any adverse conditions. When any of the safety features of UF₆ systems are activated, a corresponding indication of this activity is shown in the Control Room. This is followed by automatic interruption or termination of specific operations. If necessary, manual operations are carried out by following specific procedures for shutdown of the areas or system involved.

2.2.3 Detection of Postulated High Consequence Events

The means to detect and alert NEF operators of abnormal or emergency conditions are listed below. The immediate response by operations personnel to any abnormal event or emergency is to notify the Control Room. The Shift Manager, upon assessment of the situation, will then direct activities as prescribed in EPIPs.

2.2.3.1 Natural Phenomena

Natural phenomena (severe weather and floods) warnings will be provided to the operations personnel via the National Oceanographic and Atmospheric Administration (NOAA) Weather Alert Radio.

Automatic seismic trip of ventilation systems and associated alarms provide indications of a seismic event to operations personnel.

2.2.3.2 Nuclear Criticality

Criticality monitors strategically located wherever uranium quantities at or above the 10 CFR 70.24 limits are stored, handled or processed would accomplish nuclear criticality detection, in the highly unlikely event a criticality should occur. A criticality event would alarm audibly and visually in the Control Room and throughout the facility.

2.2.3.3 Fires Propagating Between Areas

A facility-wide fire detection system is provided including a microprocessor-based intelligent central alarm console. Fire in the facility structures would be immediately detected and alarm locally and in the Control Room.

2.2.3.4 Fires Involving Excessive Transient Combustibles

A facility-wide fire detection system is provided including a microprocessor-based intelligent central alarm console. Fire in the facility structures would be immediately detected and alarm locally and in the Control Room.

Facility personnel in the course of their normal duties, vehicle drivers, and security patrol and/or security video cameras would detect a UBC Storage Pad fire visually.

2.2.3.5 Heater Controller Failure

Alarms in the Control Room would alert the operators to the abnormal high temperature.

If the sequence progresses, facility personnel near the area would immediately detect the release. With a UF_6 release, resultant uranyl fluoride (UO_2F_2) would be visible and the presence of hydrogen fluoride (HF) would easily be detected due to its strong odor.

2.2.3.6 Over-Filled Cylinder Heated to Ambient

Alarms in the Control Room would alert the operators to the abnormal overfilled condition. If the sequence progresses, facility personnel near the area would immediately detect the release. With a UF_6 release, resultant UO_2F_2 would be visible and the presence of HF would easily be detected due to its strong odor.

2.2.3.7 Product Liquid Sampling Autoclave Heater Failure Followed by Reheat

Alarms in the Control Room would alert the operators to the abnormal conditions detected by the HF monitor and the autoclave pressure in any Product Liquid Sampling Autoclave. If the sequence progresses, facility personnel near the area would immediately detect the release.

3.0 CLASSIFICATION AND NOTIFICATION OF ACCIDENTS

The emergency classification scheme utilized at the National Enrichment Facility (NEF) is based on the severity of the events and reporting requirements in accordance with 10 CFR 70.22(i) and 40.31(j). The classification covers all conceivable incidents ranging from non-radiological situations through minor UF₆ releases to ruptures of a UF₆ cylinder.

3.1 CLASSIFICATION SYSTEM

Two classification categories have been established for postulated incidents at the NEF - Alert and Site Area Emergency. The difference between the two categories is that in a Site Area Emergency, assistance could be required from offsite response organizations to implement protective actions offsite. Alert and Site Area Emergency are defined further in Sections 3.1.1, Alert and 3.1.2, Site Area Emergency below.

The only postulated Integrated Safety Analysis (ISA) events for the NEF that could require assistance from offsite organizations are a fire, a very large release of UF₆ or a criticality event.

To standardize responses to events by different NEF individuals, the threshold for escalating an event from an Alert to a Site Area Emergency is based on indications of a release (e.g., indications such as the presence of a white vapor cloud issuing from buildings that house UF₆) that could require a response by an offsite response organization to protect persons off site from reaching the offsite exposure limits set forth in 10 CFR 70.22(i)(1)(i). The processes for making the appropriate classification are provided in the Emergency Plan Implementing Procedures.

An Alert and Site Area Emergency are defined in Section 3.1.1, Alert and 3.1.2, Site Area Emergency below. Examples of site-specific incidents and the emergency classification that would be declared for each event are referenced in Table 3.1-1, Classification of Postulated Events.

3.1.1 Alert

An Alert is defined as an incident that has led to or could lead to a release to the environment of radioactive or other hazardous material, but the release is not expected to require a response by an offsite agency to protect persons off site.

Events or conditions that would be classified as Alerts include events described in Section 2.1.2, Postulated Intermediate Consequence Events, conditions described in Section 2.1.4, Non-Integrated Safety Analysis - Alert Conditions and consistent with Regulatory Guide 3.67, dated January 1992, and other conditions that warrant activation of the Emergency Organization (EO).

3.1.2 Site Area Emergency

A Site Area Emergency is defined as an incident that has led or could lead to a release to the environment of radioactive or other hazardous material and that could require a response by an offsite response organization to protect persons off site. Incidents postulated for this classification are highly unlikely.

Events or conditions that would be classified as Site Area Emergencies include events described in Section 2.1.1, Postulated High Consequence Events, conditions described in Section 2.1.3, Non-Integrated Safety Analysis – Site Area Emergency Conditions, and consistent with Regulatory Guide 3.67, dated January 1992, and other conditions that warrant activation of offsite EO or notification of the public.

The postulated high consequence events described in Section 2.1.1, Postulated High Consequence Events would be classified as a Site Area Emergency.

3.2 NOTIFICATION AND COORDINATION

National Enrichment Facility (NEF) personnel are in the facility on a routine basis. Facility personnel are trained in the hazards of UF₆ and the indications that a UF₆ release has occurred or is in progress (e.g., white smoke, strong, pungent odor). The response of facility personnel to an Alert and Site Area Emergency is outlined in Sections 3.2.1, Alert and 3.2.2, Site Area Emergency.

3.2.1 Alert

Indicators, alarms and automatic shutdowns are in place to control chemical hazards by automatic interruption or termination of specific operations. Operations personnel are trained to judge the severity of an emergency incident based upon the type of emergency, facility area or zone, equipment involved, and surrounding conditions. The NEF SAR defines radiation protection objectives, onsite contamination control, abnormal operations, and accidents.

Once notified or becoming aware (through indications or alarms) of emergency conditions, the Shift Manager classifies the emergency using the Emergency Action Levels (EALs) provided in an EPIP specifically written to provide criteria for determining the emergency classification.

Upon determining the parameters of the incident meet the Alert Classification, the Shift Manager declares the facility to be in the Alert, activates the EO, and assumes the responsibility of the Emergency Director. The Shift Manager retains this responsibility until relieved by the Plant Manager or his designee. Upon being relieved, the Shift Manager continues to provide assistance to the Emergency Director to contain and assess the impact of any material released and to restore the facility to a normal and safe status.

The Emergency Director (either the Shift Manager or Plant Manager or designee) upon declaration of the facility being in an Alert initiates the following actions:

- Notifies facility personnel of the facility being in an Alert by sounding a pre-determined alarm, followed by notification that the facility is in an Alert and a brief description of the incident
- Provides immediate response instructions for facility personnel
- Initiates personnel accountability if necessary
- Notifies the appropriate offsite organizations and the Nuclear Regulatory Commission (NRC). The offsite organizations will be notified within 15 minutes of declaring an Alert. Immediately following notification of the offsite assistance organizations, the NRC will be notified. In all cases, the NRC will be notified within one hour of declaring an emergency.

If the above measures are successful in controlling the emergency, no further immediate action is required and the Emergency Director may terminate the event. Follow-up investigations that may be conducted for incidents involving chemical or radiological releases are as follows:

- Special urine or fecal samples may be required for personnel involved. Facility personnel who have urine sample results above the action level are put on work restriction and additional investigative samples are requested.
- If the incident involved a release, fence line samples are counted to determine the extent of the release within the Controlled Area (CA).
- Decontaminate facility personnel in the Medical Room if necessary.

If actions are not successful in controlling the condition, the emergency is escalated to Site Area Emergency.

3.2.2 Site Area Emergency

The Shift Manager using the EALs shall declare a Site Area Emergency, staff the Emergency Operations Center (EOC), and perform the actions described in Section 3.2.1, Alert. This would involve notification of necessary off site agencies (e.g., NRC, local and state emergency response groups) and recommending initial protective actions. All facility personnel shall evacuate the affected area and report to an Assembly Area. Personnel may re-enter the affected area with appropriate personnel protective equipment, obtained from the safety equipment storage locations as directed by the Shift Manager. Control of this level of emergency would probably necessitate the shutdown and isolation of the affected system or suspension of all operations. The Emergency Director makes the decision to shutdown and/or isolate systems or operations.

If the above measures are successful in controlling the Site Area Emergency, then the action turns to a follow-up investigation that would be conducted as follows:

- Special urine or fecal samples may be required for personnel involved. Facility personnel who have urine sample results above the action level are put on work restriction and additional investigative samples are requested.
- Fence line and offsite samples are counted to determine the extent of the release within the CA.
- Decontaminate facility personnel if necessary.

3.3 INFORMATION TO BE COMMUNICATED

NEF EOC personnel have direct communications with key offsite response personnel to facilitate immediate emergency response.

To facilitate consistent and concise transmittal of Alert and Site Area Emergency information to offsite response organizations, an Emergency Notification Form is used to issue both initial and follow-up emergency response information. The form will be used as a script for the initial notification and will be transmitted electronically as a confirmation to the notification. A copy of the Emergency Notification Form is contained in Table 3.3-1, National Enrichment Facility Emergency Notification Form.

Blank copies of the Emergency Notification Form are available in the Control Room, and at the key response locations. Since the information that can be transmitted by this message format is limited, it may be necessary to add additional comments.

Once communications are established between the facility and the key response personnel, the form and content of the messages may be modified by offsite agencies to meet the needs of the developing situation. The Emergency Notification Form also serves as a communications update to off site organizations during an emergency event. Updates are provided approximately once every hour throughout the course of the event unless the frequency of updates is changed through mutual agreement among the facility and the off site organizations at the time of the event. New Mexico off site organizations include the Lea County Emergency Management Agency, Eunice Central Dispatch, Lea County Sheriff's Department and the New Mexico Department of Public Safety, Office of Emergency Management (OEM).

The State of Texas offsite organizations that are notified of the event include the Andrews County Sheriff's Office, the Texas Department of Public Safety - Midland, the Texas State Operations Center and the Texas Department of Health, Bureau of Radiation Control - Austin. Additionally, notification is made to the NRC.

If a Site Area Emergency is declared, the following recommendation is made to offsite assistance organizations.

"To prevent exposure to possible hazardous materials, persons near the National Enrichment Facility should proceed indoors and close doors and windows. Any ventilation system that draws outside air into the building should be shut off. Areas near the facility should be avoided."

Facility meteorological data provided in the Control Room may be used to provide more specific information.

The Alert and Site Area Emergency Response Notification Flow Chart is shown in Figure 3.3-1, Emergency Response Notification and Coordination with Participating Government Agencies.

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4.2 ONSITE EMERGENCY ORGANIZATION (EO)

The EO is responsible for taking immediate actions to minimize the consequences of an emergency event. The EO is staffed with personnel trained to respond to emergency events and members are required to participate in formal training, drills and exercises.

Figure 4.2-1, LES National Enrichment Facility Emergency Organization, shows the EO. Notification of EO members needed to augment the Control Room staff will be made in accordance with the Emergency Plan Implementing Procedures (EPIP).

During off-normal business hours (i.e., back shifts, outages, weekends and holidays), as a minimum, the following personnel are present at the NEF:

- Shift Manager (or Deputy Shift Manager in the absence of the Shift Manager)
- One Control Room Operator
- One Operator for each Cascade Hall and associated UF₆ handling system
- One Radiation Protection Technician
- Security personnel.

(When only one Cascade Hall is in operation, a minimum of two operators is required.)

The following EO positions are staffed by personnel onsite at all times:

- Emergency Director (filled by Shift Manager)
- Operations Shift Technicians (filled by operators)
- Security (filled by security personnel)
- Radiation Protection Technician.

4.2.1 Direction and Coordination

The initial EO consists of the on-shift personnel. At the declaration of an emergency, the Shift Manager assumes the functions of the Emergency Director and directs all initial activities until the arrival of the Plant Manager or designee. Upon arrival in the Control Room/ Emergency Operations Center (EOC), the Plant Manager or designee assumes the functions of the Emergency Director. The Emergency Director has the authority and the responsibility to initiate any emergency actions, which include:

- Providing the overall coordination of the response effort

- The decision to provide protective action recommendations to authorities responsible for implementing offsite emergency measures (normally within 15 minutes of classification). This authority shall not be delegated to other members of the emergency organization
- Coordination of the staff and offsite personnel who augment the staff
- Approval of information prior to release to the press
- Authority to request support from offsite agencies
- Authority to delegate responsibilities
- Directing the prompt notification of the local and state EOs
- Directing the assessment of actual or potential consequences both onsite and offsite throughout the evolution of the emergency condition
- Implementing protective actions for onsite personnel
- Downgrading/Termination of the emergency.

4.2.2 Onsite Staff Emergency Assignments

A. Shift Manager

At the declaration of an emergency, the Shift Manager on duty assumes the functions of the Emergency Director. The Emergency Director ensures that all actions required during any emergency condition have been performed and that all actions necessary for the protection of personnel and property are being taken.

The Shift Manager, upon being relieved of the Emergency Director functions, shall continue to take all actions necessary to ensure that any emergency situation is brought under control. This includes direction of Control Room personnel to restore facility systems and equipment to a safe condition.

B. Emergency Director

The Emergency Director or in his absence, a designated alternate, has the responsibility for activation and staffing of the EOC. Under the direction of the Emergency Director, EOC personnel provide additional technical expertise in engineering, radiological/hazardous materials monitoring and assessment to mitigate an emergency.

C. Communicator

The Communicator establishes communications with offsite agencies including the counties, states and NRC during an emergency.

D. Operations Support Coordinator

The Operations Support Coordinator and staff provide technical expertise and solutions to operational problems to the Emergency Director and the Shift Manager. His staff includes Operations and Engineering personnel and Fire Brigade members. He provides technical expertise to other members of the EOC and works closely with the Maintenance Coordinator in restoring needed station equipment to an operational status during and after the abnormal condition. The Operations Support Coordinator is also responsible for assessing collateral damage resulting from the incident.

E. Fire Brigade

The Shift Manager directs the Fire Brigade. Members of the Fire Brigade include operations personnel and a designated safety officer. The safety officer is trained in criticality and is responsible for ensuring that moderator concerns for criticality safety are appropriately considered during firefighting activities. Radiation protection and security personnel may accompany the fire brigade based on the nature of the emergency.

F. Maintenance Coordinator

The Maintenance Coordinator reports to the Emergency Director. He provides technical and engineering expertise to the other members of the EOC in areas of Mechanical Maintenance, Instrument and Electrical Maintenance and Materials Support. He directs repair team dispatch. The Materials Support function, provided by the Maintenance Coordinator, includes obtaining and providing equipment and components, as needed to support the emergency response.

G. Health, Safety & Environmental (HS&E) Coordinator

The HS&E Coordinator reports to the Emergency Director and provides expertise in areas of chemical and radiation protection, consequence assessment, criticality safety, industrial safety and environmental compliance. The HS&E Coordinator's duties may include communications with offsite chemical and radiological emergency monitoring groups.

The HS&E Coordinator provides EOC personnel with information and recommendations concerning chemical and radiation levels at the facility. The HS&E Coordinator is responsible for gathering and compiling onsite and offsite radiological and chemical monitoring data. The HS&E Coordinator makes recommendations to the Emergency Director concerning actions deemed necessary for limiting chemical and radiological exposures to personnel. The HS&E Coordinator also directs radiological and chemical decontamination activities for personnel and equipment.

H. Emergency Operations Center (EOC) Coordinator

The Emergency Operations Center Coordinator provides licensing and administrative support to members of the EO. The EOC Coordinator is responsible for records collection and retention. The EOC Coordinator staff includes the support staff for other members of the EOC. The EOC Coordinator is also responsible for obtaining additional personnel resources, if necessary.

I. Security Coordinator

The Security Coordinator is responsible for site evacuation, personnel accountability, facility security and site access control. Security personnel may assist in fire control, first aid, and facility search and rescue activities.

J. Community Relations Coordinator

The Community Relations Coordinator is responsible for coordinating news releases to the public. This includes ensuring that news releases are accurate, timely and coordinated with other agencies making similar news releases. There is a direct line of communication between the Community Relations Coordinator and the Emergency Director to ensure current and factual news releases are approved and released in a timely manner.

4.3 LOCAL OFFSITE ASSISTANCE TO FACILITY

The severity of an emergency may warrant the use of offsite organizations and agencies. When contacted, the Central Dispatch in the Eunice Police Department will dispatch fire, Emergency Medical Services (EMS) and local law enforcement personnel. Mutual aid agreements currently exist between the Eunice Police Department, Lea County Sheriff's Department, and New Mexico State Police, which are activated if additional police support is needed. Mutual aid agreements also exist between Eunice, New Mexico, the City of Hobbs Fire Department, and Andrews County, Texas, for additional fire and medical services. If emergency fire and medical services personnel in Lea County are not available, the mutual aid agreements are activated and the Eunice Central Dispatch will contact the appropriate local agencies for the services requested at the facility.

Memoranda of Understanding (MOU) have been signed between LES and Eunice Fire and Rescue and the City of Hobbs Fire Department for fire and medical emergency services. MOUs have also been signed with the Eunice Police Department, the Lea County Sheriff's Office and the New Mexico Department of Public Safety, which includes both the New Mexico State Police and the New Mexico Office of Emergency Management (OEM). Copies of the Memoranda of Understanding with the agencies that have agreed to support LES for construction and operation of the NEF are included in Attachment 1, Memoranda Of Understanding. The Emergency Preparedness Manager ensures that MOU with offsite agencies are reviewed annually and renewed at least every four years or more frequently if necessary. The Emergency Preparedness Manager maintains files of the current MOU.

The Texas Department of Public Safety, Division of Emergency Management, understands the limited potential of a release and is in agreement that the New Mexico Department of Public Safety, OEM is responsible for coordinating the emergency response. Because of the proximity of the facility to the Texas state border, Texas agencies are notified of a declared emergency. Notifications are made to the Andrews County Sheriff's Office, the Texas Department of Public Safety – Midland, the Texas State Operations Center – Austin, the Texas Department of Health, Bureau of Radiation Control-Austin.

Facility security personnel provide site access control and escort support for the responding offsite organizations. Necessary emergency information is provided to the responding organizations, including potential hazards associated with the incident. The offsite emergency support organizations are described in the following subsections.

4.3.1 Medical Support

In certain instances, medical emergencies may require the transport of an injured person from the NEF to an offsite medical facility. The Eunice Fire and Rescue, located in Eunice, will normally provide transportation of injured persons. In the event that the Eunice Fire and Rescue ambulances are not available, the Eunice Central Dispatch will activate the mutual aid agreements for dispatch of an ambulance to the NEF.

4.3.2 Fire Support

If the Emergency Director determines that offsite fire support is needed, the Eunice Central Dispatch will dispatch the Eunice Fire and Rescue, located approximately 8 km (5 mi) from the facility.

Equipment at the Eunice Fire and Rescue includes:

Three Ambulances;

Three Pumpers;

- one 340 m³/hr (1,500 gallons per minute (gpm)) pumper which carries 3,785 liters (1,000 gallons) of water on board,
- one 227 m³/hr (1,000) gpm pumper which carries 1,893 liters (500 gallons) of water on board,
- one 284 m³/hr (1250 gpm) pumper which carries 2,839 liters (750 gallons) of water on board.

One Water Truck 22,700 liters (6000 gallon) with 114 m³/hr (500 gpm) pumping capacity

Three Grass trucks;

- one 3,785 liters (1,000 gallon) water truck with a 68 m³/hr (300 gpm) pump,
- one 1,136 liters (300 gallon) water truck with a 34 m³/hr (150 gpm) pump,
- one 946 liters (250 gallon) water truck with a 34 m³/hr (150 gpm) pump.

Rescue Truck;

- Vehicle Accident Rescue Truck with 379 liters (100 gallons) of water on board and 45 m³/hr (200 gpm) pump.

If additional fire equipment is needed, or if the Eunice Fire and Rescue is unavailable, the Central Dispatch will call the Hobbs Fire Department. In instances where radioactive/hazardous materials are involved, knowledgeable members of the facility EO provide information and assistance to the responding offsite personnel.

4.3.3 Law Enforcement

During an emergency, local law enforcement agencies may be needed to assist in the emergency response effort. The Eunice Police Department provides initial response with the Eunice Fire and Rescue and has five officers on staff. The Lea County Sheriff's Department and the State of New Mexico maintain sheriff's deputies and State police officers in the Eunice

area that will respond if additional resources are needed. Additionally, during a declared emergency, the New Mexico Department of Public Safety can dispatch additional New Mexico State Police as needed. Emergency law enforcement support may include the following:

- Providing traffic control,
- Controlling access to areas affected by the emergency,
- Assisting security personnel,
- Responding to bomb threat, and/or
- Providing Tactical (TAC) Teams.

4.3.4 Medical Service

Lea Regional Medical Center, located in Hobbs, is utilized for treatment of personnel who cannot be treated properly at the facility. Physicians at the Lea Regional Medical Center will be informed in advance of the associated chemical and radiological hazards that may complicate injuries when the facility begins enrichment activities.

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5.0 EMERGENCY RESPONSE MEASURES

5.1 ACTIVATION OF EMERGENCY ORGANIZATION (EO)

5.1.1 Alert

- A. If a person observes an emergency condition, the person leaves the area (unless needed to provide life-saving support) and contacts the Control Room, providing initial information regarding the condition. Control Room personnel initiate the following actions:
- Evacuate the area by either sounding the evacuation alarm in the affected area and/or by dispatching operators or security personnel to the area.
 - The Shift Manager classifies the emergency using the Emergency Action Levels (EALs) provided in an Emergency Plan Implementing Procedures (EPIP) specifically written to provide criteria for determining the emergency classification (general examples of these criteria are referenced in Section 3.1, Classification System).
- B. Upon determining the incident is an Alert, the Shift Manager declares the emergency and assumes the responsibility of the Emergency Director. The Shift Manager retains this responsibility until relieved by the National Enrichment Facility (NEF) Plant Manager or his designee. Upon being relieved, the Shift Manager continues to provide assistance to the Emergency Director to contain any material released, to assess the impact of any material released and to restore the facility to a normal and safe status.
- C. The Emergency Director (either the Shift Manager or NEF Plant Manager or designee) initiates the following actions:
- Notifies facility personnel of the Alert by sounding a pre-determined alarm, followed by notification that the facility is in an Alert condition and a brief description of the incident.
 - Provides instructions to facility personnel (e.g., proceed to Assembly Area, staff the primary Emergency Operations Center (EOC)).
- D. Personnel in affected areas or entire facility evacuate and proceed to Assembly Area, if assembly/ accountability is required.
- E. The Security Coordinator initiates personnel accountability.
- F. An Emergency Notification Form is issued to state/county agencies (normally within 15 minutes of classification).
- G. Radiation Protection personnel set up radiological air sampling and contamination control point(s) if there is potential involvement of radioactive or chemically hazardous material.

- H. If the situation involves a spill of hazardous material, the EOC directs a spill control/cleanup team through the Team Leader near the scene of the spill.
- I. EOC coordinates appropriate recovery activities/operations.

The extent of the EOC staff to be activated is determined by the Emergency Director. The entire EOC organization is shown in Figure 4.2-1, National Enrichment Facility Emergency Organization. Any personnel needed from offsite (e.g., off duty personnel) are summoned to the facility. Augmentation of Security personnel will be performed, if needed, in accordance with the Safeguards Contingency Plan.

5.1.2 Site Area Emergency

- A. If an Alert is upgraded to a Site Area Emergency, the Emergency Director announces the new classification, activates appropriate alarm/warning systems, makes the appropriate facility announcements and makes offsite state/county notifications (normally within 15 minutes of classification).
- B. If the initial event meets the criteria of a Site Area Emergency, the Shift Manager declares the emergency condition and assumes the responsibility of the Emergency Director as described in Section 5.1.1 Alert.
- C. Automatic alarms activated as a result of an emergency situation are continuously monitored in the Control Room and Security Station.
- D. EOC directs the emergency team to the area of incident and assesses personnel evacuation requirements.
- E. Personnel in the facility are directed to proceed to Assembly Areas.
- F. The Security Coordinator initiates personnel accountability.
- G. An Emergency Notification Form is issued to initiate notification of offsite authorities.
- H. Radiation Protection personnel initiate radiological air sampling and contamination control point(s) if there is potential involvement of radioactive material or chemically hazardous material.
- I. Special urine or fecal samples may be required for personnel involved. Facility personnel who have urine sample results above the action level are put on work restriction and additional investigative samples are requested.
- J. Fence line samples are taken to determine the extent of the release within the Controlled Area (CA) if radiological or chemical releases are involved.
- K. Facility personnel are decontaminated in the Medical Room, if necessary.

- L. If the situation involves a release of hazardous material, the EOC directs a spill control/cleanup team through the Team Leader near the scene of the spill.
- M. The Emergency Director, through coordination with the EO, selects control methods to return the facility to a safe condition.
- N. EOC coordinates appropriate recovery operations.

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5.2 ASSESSMENT ACTIONS

5.2.1 Alert

The Emergency Director monitors the situation to ensure facility, personnel, and public safety and to secure and protect facility equipment. Appropriately trained emergency response personnel or teams respond as necessary to protect personnel and secure the facility. If a liquid or gaseous release occurs, radiological/chemical spill control teams initiate containment, control and cleanup efforts. Dose projections of offsite radiation and hazardous material exposures will be made and will be provided to off site response agencies using the Emergency Notification Form, (see Table 3.3-1, National Enrichment Facility Emergency Notification Form). The Emergency Director or designee will advise offsite assistance organizations of the situation and/or request for their assistance.

5.2.2 Site Area Emergency

In addition to those actions outlined above for an Alert condition, the following actions are taken in the event of a Site Area Emergency:

- A. If radiological or chemical releases have occurred, monitoring personnel initiate radiation or chemical surveys of the Assembly Area(s), the EOC, and the facility. Environmental air sampling is extended offsite if necessary.
- B. Radiation Protection determines if a radiological release or criticality accident has occurred.
- C. EOC coordinates turning off of facility services, if necessary.
- D. EOC coordinates cleanup and facility re-entry operations with appropriate organizations.
- E. The Emergency Director or his designee coordinates notifications to regulatory agencies/Emergency Organizations (EOs).
- F. EOC and Security Coordinator coordinate any relocation of Assembly Areas.

5.2.3 Monitoring and Sampling

For those incidents in which UF_6 is released (refer to Section 2, Types of Accidents, for a description of potential incidents) monitoring and sampling are performed to assess the extent and amounts of material released. This includes water, air and soil samples in the release path. Urine and fecal samples are taken from workers exposed to the release. Depending on the extent and amounts of contamination, cleanup of areas begins as soon as possible. The sampling and monitoring continue until decontamination is complete. Monitoring and sampling of areas off of the NEF site will be coordinated with the New Mexico Environment Department - Radiation Control Bureau, and the State EOC.

5.2.4 Assessment of Releases

NEF personnel make projections of offsite radiation and chemical exposures. These projections are based upon the estimated amount of UF_6 released, the point of release and meteorological conditions at the time of release. To enhance the ability of the facility to perform these assessments, NEF uses the Radiological Assessment System for Consequence Analysis (RASCAL) software. The procedures to be used with this software are contained in the user's guides that are supplied with the software. RASCAL is a nationally recognized model for use in estimating the consequences of a release of materials from nuclear facilities and will not be specifically validated for use at NEF. RASCAL, Version 3.0 includes a 'close-in' straight-line Gaussian plume model that computes doses at distances from 25 to 800 meters (80-2,600 feet). A lagrangian puff model is used for longer distances. Additional capabilities include the ability to enter isotopic source terms in mass units and a simple model of the toxicity of UF_6 .

Results of chemical and radiological exposure projections will be shared with the New Mexico Environment Department - Radiation Control Bureau, the New Mexico EOC and Texas State Operations Center, Texas Environmental Hotline, the Texas Department of Health, Bureau of Radiation Control - Austin, and the NRC.

5.3 MITIGATING ACTIONS

Standard chemical facility safeguards are provided throughout the process and process systems (e.g., indications, alarms, and automatic shutdown systems). Operating the enrichment process at subatmospheric pressure prevents the major chemical hazard in the facility (i.e., leakage of UF_6).

5.3.1 Alarms and Automated Actions

Alarm systems that indicate abnormal operating conditions are provided in the Control Room for each of the Cascade Halls. Radio communications and Public Address (PA) audio communications with operators and supervisors in the operating areas provide the necessary detection and communication capability to trigger a facility-wide alarm for protection of workers and the start of mitigation procedures for UF_6 release prevention.

If the main alarm systems are inoperable, radio communications are the next immediate avenue of activation of this plan. Facility operating personnel provide nearly continuous surveillance of operating areas through routine inspections and observations. The high visibility of any UF_6 release and the strong odor of HF provide immediate identification methods for operator response to any adverse conditions. When any of the safety features of UF_6 systems are activated, a corresponding indication of this activity is shown on local control centers and in the Control Room. This is followed by automatic interruption or termination of specific operations. If necessary, manual operations are carried out by following specific procedures for shutdown of the areas or system involved.

All UF_6 processing functions are monitored by instrumentation; mainly pressure sensing equipment, to ensure any process-upset condition is detected. If a significant event occurs in the UF_6 process, the instrumentation generates both visual and audible alarms in the Control Room. If necessary, the instrumentation automatically stops the enrichment process and evacuates the UF_6 process piping. The detection and effects and consequences of significant abnormal operations are described in the NEF SAR.

Leaks are also detected through the presence of HF. HF results when UF_6 combines with water in the atmosphere to form uranyl fluoride (UO_2F_2) and HF. This combination has a strong, characteristic odor and has a smoke-like appearance. HF monitoring and associated Control Room alarms are provided as described in Section 6.4.5, Hydrogen Fluoride (HF) Monitoring. Personnel on shift would respond to the abnormal event (e.g., sealing any leak of UF_6). Based upon a review of abnormal events that could occur at the NEF, it is expected that shutdown of affected systems, components, or processes would occur within 30 minutes from discovery of the abnormal event.

5.3.2 Fire Protection

The NEF maintains a comprehensive program for fire protection. Fire protection includes the design, installation, testing and maintenance of fire detection and suppression systems as well

as a fire prevention program. The fire prevention program will consist of a policy statement, the Fire Hazards Analysis (FHA), use of administrative controls, fire safety procedures, a qualified and trained fire protection staff and guidelines for fire fighting within the facility, including moderation-controlled areas. The fire prevention program is part of the defense in depth concept to reduce the potential for fire. Descriptions of the fire protection program are contained in Chapter 7, Fire Safety, of the NEF SAR.

The fire protection systems for the NEF includes a dedicated water supply and distribution system, automatic fire suppression systems (sprinklers and alternate systems), standpipe and hose stations, fire extinguishers, fire detection systems (including manual alarm and notification systems), fire pump control systems, valve position supervision, and system maintenance and testing. The fire protection systems installation and operation are in accordance with applicable standards and guidance.

The fire prevention program will include administrative control procedures, fire department/fire brigade response, and pre-fire plans.

Portable fire extinguishers are installed throughout all buildings. Multi-purpose extinguishers will generally be provided for Class A, B, or C fires. Specialized extinguishers will be located in areas requiring protection against particular hazards.

NEF maintains a facility fire brigade, which serves as the initial line of defense to contain or extinguish a fire pending the arrival of the local fire department.

Detailed pre-fire plans will be developed as building and process designs are completed to provide on-site and off-site fire fighters a ready reference of materials and important features of each area of the facility.

The pre-fire plans will include the location of fire protection equipment; approach paths for fire response and egress/access points; potential fire, chemical and radiation hazards in the area; special fire-fighting instructions; special considerations for moderator control required areas; utilities; emergency lighting; power supply and ventilation isolation means; critical facility equipment in the area and other information considered necessary by fire emergency response personnel. Pre-fire plans will be periodically reviewed and updated, if required.

5.3.3 Alarm Response

In the event of a criticality, criticality alarms would alert workers to evacuate the area. Mitigating actions would include determining the cause of the criticality event and preventing recurrence, turning off ventilation systems and closing doors to contain potential releases.

In the event of a UF₆ leak or a facility fire, mitigating actions would include extinguishing fires, manipulation of UF₆ system controls, plugging of leaks, containing any released UF₆ (e.g., shutting doors, turning off ventilation systems), and evacuating personnel from affected areas. Mitigating actions for personnel offsite could include recommendations to stay indoors, shut windows and doors, and secure Heating, Ventilating, and Air Conditioning (HVAC) systems.

Procedures are developed and maintained for responding to emergency conditions. Directions for manual actions to be taken to bring a facility to a safe condition are contained in the Operating Procedures.

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5.4 PROTECTIVE ACTIONS

Section 5.4.1, Onsite Protective Actions, outlines protective actions to be taken for onsite personnel. Section 5.4.2, Offsite Protective Actions, outlines actions to be taken, if conditions warrant, by NEF to assist and make recommendations to local offsite EOs to assist offsite persons.

5.4.1 Onsite Protective Actions

5.4.1.1 Personnel Evacuation and Accountability

Evacuation from facility process areas to Assembly Areas and evacuation from the site are determined by the Emergency Director, based on the emergency conditions/events at hand. Subsequent evacuation procedures and routes are outlined in the EIPs.

Situations not requiring EO response for control, containment and recovery are brought to the attention of appropriate personnel directly or by means of an announcement over the PA system or by telephone. Examples of this type of situation include localized radioactive material spills, personnel injuries, and small, localized fires.

Audible alarms along with visual flashing lights are utilized to initiate facility process area evacuation. An additional manual fire alarm system can also initiate a facility process area evacuation. The PA system, radiation alarms, and fire alarms have emergency backup power.

In the event of a facility process area evacuation, visitors are the responsibility of the facility employee being visited. A register of visitors to the NEF is kept at the Security Station and is available to the Security Coordinator.

The Security Coordinator is responsible for accounting for all site personnel. A missing persons/accountability check may be made in defined Assembly Areas. If necessary, a team will be dispatched to locate personnel who cannot be accounted for administratively. Upon accounting for personnel, the Emergency Director decides whether to evacuate non-essential personnel from the site. If needed, the Radiation Protection Manager initiates radiological monitoring of evacuees, decontamination, and selection for medical attention.

Two Assembly Areas are provided for site personnel. One Assembly Area is located in the first floor break room of the TSB. A second Assembly Area is provided in the first floor lobby of the Administration Building.

The Emergency Director is responsible for deciding whether a facility evacuation is necessary and which evacuation exit is used. Personnel can evacuate the site either through the normal main entrance or through the alternate entrance. Planned site evacuation routes are shown on Figure 1.2-1, Facility Layout Map.

5.4.1.2 Use of Protective Equipment and Supplies

Radiation Protection and chemical monitoring personnel are trained in the use of respirators, communications equipment, and protective clothing. To become qualified, each individual assigned to perform emergency field monitoring must pass an appropriate medical examination. The HS&E Coordinator decides when the protective equipment needs to be issued.

Supplies and equipment are located in the TSB and Security Building. Emergency equipment areas are also located inside and outside the main process buildings. The Industrial Safety Manager coordinates the use and distribution of emergency supplies and equipment. The use and locations of emergency equipment and supplies are integral parts of periodic training.

Details of the locations, types, and quantities of protective equipment and supplies including respiratory protection equipment and protective clothing are maintained in the Control Room and Security Building. Protective equipment and supplies will be periodically inventoried and tested to ensure they are available in case of emergency.

5.4.1.3 Contamination Control Measures

Contamination controls are established throughout the facility. During an emergency, additional contamination controls, if needed, are established as close as possible to the contaminated area. All equipment, material, and personnel coming out of the contaminated area pass through the control point for surveying.

Contaminated equipment and material are put in plastic bags or wrapped in plastic. Contaminated personnel are decontaminated and sent to the Assembly Areas. Injured personnel are decontaminated prior to leaving the Controlled Area (CA), if injuries permit. In the event of serious injuries, injured personnel are transported to the appropriate facilities for treatment and decontamination under medical supervision.

Return of personnel and equipment to operation are made after:

- Airborne radioactivity levels are within the NEF administrative guidelines.
- Chemical concentrations have been reduced to below permissible exposure limits as defined by Occupational Safety and Health Administration (OSHA) (29 CFR 1910.1000, Table Z.2, 8 hour time weighted average, industrial requirements).
- Surface contamination levels do not present a personnel hazard through direct radiation exposure, inhalation/ingestion, further spread of the contamination, nor re-suspension in the air.
- The cause of the incident has been investigated and identified.
- Facility safety systems are operational or an acceptable substitute has been installed.

5.4.2 Offsite Protective Actions

In the unlikely event of a situation where accidental releases from the NEF could reach offsite individuals, the Emergency Director makes recommendations to offsite authorities concerning protective actions for offsite persons. Specific recommendations would depend upon the event in progress (e.g., amount of UF_6 released, concentration of UF_6 expected offsite and meteorological conditions). In most cases, recommendations would involve only moving indoors and shutting windows and doors until the event concludes. In the case of a Site Area Emergency, the following recommendations are made to offsite assistance organizations for persons offsite:

"To prevent exposure to possible hazardous materials, persons near the National Enrichment Facility (NEF) should proceed indoors and close doors and windows. Any ventilation system that draws outside air into the building should be shut off. Areas near the facility should be avoided."

Facility meteorological information available in the Control Room may be used to provide more specific information. When available, offsite field monitoring data are compared with source term data and included in the protective action recommendation process.

Evacuation of offsite persons is not anticipated. As noted in the background information accompanying publication of the final rule for Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licenses (54 Federal Register 14052, April 7, 1989):

"In view of two factors- (1) realistically, exposures should generally be low compared to protective action guides and (2) the fast moving nature of the accidents of concern- formal evacuation planning is not considered necessary, appropriate, or feasible."

However, in the unlikely event that evacuation of offsite persons is necessary, the evacuation would be coordinated through the New Mexico State Police and the New Mexico EOC.

The NEF, in cooperation with offsite emergency assistance organizations, would assist in implementing any recommendations made by the Emergency Director. In order to familiarize offsite persons with the potential hazards of the NEF and the implementation of emergency measures for offsite persons, information is sent to each home, if any, within 1.6 kilometers (1 mile) of the NEF describing the operation of the facility and what one could expect during a potential emergency at the facility.

The details for implementing protective actions for offsite persons and coordinating protective actions with offsite EOs are contained in the NEF EIPs.

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5.5 EXPOSURE CONTROL IN RADIOLOGICAL EMERGENCIES

5.5.1 Emergency Radiation Exposure Control Program

5.5.1.1 Radiation Protection Program

In any case involving radiation exposure, efforts are made to satisfy As Low As Reasonably Achievable (ALARA) principles. The Emergency Director is responsible for authorization of workers receiving emergency doses. Exposure and contamination control is outlined in NEF EIPs that include further discussion on exposure to radiation and intake of chemicals.

Any onsite or offsite workers who agree to emergency doses during emergencies are informed of the potential dangers of the emergency doses. The emergency dose levels are also a topic of emergency planning training for onsite workers, as well as offsite assistance organization personnel.

5.5.1.2 Exposure Guidelines

Dose Limits for Workers Performing Emergency Services

<u>Emergency Service</u>	<u>Soluble Uranium</u>	<u>Total Effective Dose Equivalent</u>	<u>Hydrogen Fluoride</u>	<u>Conditions</u>
All	0.6 mg/m ³	50 mSv (5 Rem)	2 ppm	
Protecting Valuable Property	1 mg/m ³	100 mSv (10 Rem)	20 ppm	Lower Dose not Practicable
Life Saving or Protecting Valuable Property	10 mg/m ³	250 mSv (25 Rem)	50 ppm	Lower Dose not Practicable
Life Saving or Protecting Valuable Property	> 10 mg/m ³	> 250 mSv (> 25 Rem)	> 50 ppm	Only on a voluntary basis to persons fully informed of risks involved

The limits listed above apply to the following functions:

- Removing injured persons
- Undertaking mitigating actions

- Performing assessment actions
- Providing onsite first aid
- Performing personnel decontamination
- Providing ambulance service
- Providing offsite medical treatment.

In most instances, these limits would never expect to be exceeded due to the availability of appropriate personnel and respiratory protective equipment.

5.5.1.3 Monitoring

Dose measurement and estimation techniques may be subdivided into several categories.

- NEF employees and offsite organization personnel entering the CA wear Thermoluminescent Dosimeter (TLD) badges and Self Reading Dosimeters to monitor beta gamma exposure. TLD badges and Self Reading Dosimeters are given to offsite organization personnel when they arrive onsite, prior to proceeding into the CA.
- Criticality dosimeters are located within the facility building which, when recovered and evaluated, provide spectrum information and assist in reconstruction of any criticality incident.
- Air sampling is used in situations involving airborne dispersal of uranium.
- Bioassay sample collection (fecal, urine, and nose smears) shall be used for assessing exposure to internal emitters. Bioassay is also used to assess total exposure to uranium.

Exposure records are maintained in accordance with the facility records management system and are evaluated by the Radiation Protection Manager.

5.5.2 Decontamination Of Personnel

Personnel decontamination, in the event of a minor, or localized, incident not involving facility evacuation is accomplished by using standard radiation protection practices. Available facilities in this situation include personnel showers for whole body decontamination and decontamination materials for localized contamination involving a limited body area. Decontamination efforts are directed and evaluated by Radiation Protection personnel. Radiation Protection procedures are available specifying the extent of decontamination efforts that may be undertaken without medical supervision. To support personnel decontamination during a facility evacuation, a decontamination kit, including selected decontamination agents is included with the emergency supplies. This kit enables prompt gross decontamination where low levels are involved.

Action levels for determining the need for personnel decontamination and the means for decontamination of personnel, wounds, supplies, instruments, and equipment are at the direction of the Radiation Protection Manager. In cases of personal injury accompanying contamination, decontamination efforts shall not interfere with or take precedence over proper medical care. Instances of contamination above limits are documented and, if appropriate, reported to the NRC.

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6.0 EMERGENCY RESPONSE EQUIPMENT AND FACILITIES

Emergency facilities and equipment aid the Emergency Organization (EO) to assess the emergency, perform corrective actions and mitigate the emergency, protect personnel, provide information to offsite support agencies and perform recovery actions.

6.1 COMMAND CENTER

The initial response to an emergency occurs in the Control Room. The Shift Manager initially will declare the emergency, assume the duties of the Emergency Director and direct the response actions of the staff. The Control Room will initially serve as the Emergency Operations Center (EOC). The Control Room/EOC controls communications equipment to all principal points within and outside the facility. The Control Room/EOC contains current as-built drawings, procedures, and operational engineering information to assist in routine operations and in emergency response.

The EOC and its personnel perform the following duties:

- Assess abnormal conditions,
- Notify additional facility personnel, if needed,
- Make offsite notifications,
- Perform/Direct accident mitigation,
- Direct Facility operations, and
- Implement onsite protective actions.

The planned alternate EOC for emergency response is in the Security Building, which is the principal entry area for the facility. Depending on the nature and location of the emergency situation, or if the Control Room becomes uninhabitable, the Emergency Director may move the emergency operations to the Security Building or another appropriate location. The same documentation available in the EOC is also available in the alternate EOC.

These two EOCs are located in different and physically separated buildings and it is very unlikely that both areas would be unavailable simultaneously. An alternate offsite location, with appropriate documentation for use in the response to an event is described in the Safeguards Contingency Plan.

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6.2 COMMUNICATIONS EQUIPMENT

6.2.1 Onsite Communications

The primary communication systems at the National Enrichment Facility (NEF) include the facility telephone system with FAX capability, the Public Address (PA) system, alarms, and two-way radios. The communications systems are designed so that a failure in one system does not leave the facility without communications capability. These communications systems are designed with redundant devices for emergency communications.

The system design includes a two-way radio communications and conventional telephone service between the facility and local law enforcement authorities and ambulance services. The design also permits continuous communications between the Control Room, the Security Alarm Center, and security personnel on duty at the facility. In the event of facility telephone system failure, voice paging and direct communications can be accomplished by the use of two-way radio.

One of the primary communications used onsite during emergency situations is radio equipment. Radios are used to communicate between the Control Room and the scene of an emergency. Extra equipment and spare portable radios are maintained in the Control Room (primary EOC) as well as at the alternate (i.e. Security Building) EOC location. All communications equipment, including power supplies, is checked on a routine basis to ensure availability and functionality.

The telephone systems are the primary emergency communications systems with offsite agencies. Maintenance and operational testing of primary and alternate communication systems is described in Section 7.6, Maintenance and Inventory of Emergency Equipment, Instrumentation and Supplies, of this plan. Additional communications descriptions and provisions for communications coordination and testing are contained in the Safeguards Contingency Plan.

6.2.1.1 Telephone Systems

The facility telephone system provides business and emergency communications. It consists of single line, multi-line and programmable digital units.

Direct voice communication within the facility is handled by a private business exchange telephone system that has a central switchboard. Use of the telephone interface with the PA amplifiers may be used to page station personnel. Special telephones feature call tracing and call recording services.

Sufficient quantities of telephones are strategically located to allow facility personnel easy access to the telephones from all facility locations.

6.2.1.2 Public Address (PA) System

The PA system has the capability to cover most of the NEF site. The PA system is tied into the telephone system through a designated access number. The system is used continuously during routine operations and any failure will be promptly corrected. During emergencies, the system is not used for routine traffic. Two-way radios are used to communicate with individuals who are not covered by the PA system.

6.2.1.3 Radio Systems

Radio systems that support the emergency response are checked on a periodic basis and problems are addressed as they are identified. The primary system components consist of the following:

- **Two-way Radio (Portable)** - The portable two-way multi-channel radios are hand held. The radio signal is strong enough such that anyone can be contacted on site.
- **Two-way Radio (Mobile)** - The mobile two-way radios with multiple channels are mounted in vehicles on stable mounts. The radio signal reaches all areas of the facility and may be used to communicate with offsite emergency agencies.
- **Radio Base Station** - The radio base station is a desktop model with multi-channel, high band and low band capability. These bandwidths provide the capability to communicate with the hospital, emergency medical services, the State Police, and the New Mexico Department of Public Safety, Office of Emergency Management (OEM).

Two-way radio communication is used when the facility telephones are not accessible. Some facility radio frequencies are compatible with local law enforcement agencies, security, hospitals, fire department or facility personnel. The radio tower is centrally located on the facility site.

The radio base stations are powered by diesel-backed AC sources and remain operative following loss of offsite power.

6.2.1.4 Alarms

Emergency alarms are annunciated over the PA system, in the Control Room and Security Alarm Center. A pre-recorded alarm is used to indicate an emergency situation such as a fire, an injury, or site/area evacuation. The alarm will sound and be followed immediately with a message giving directions over the PA system.

6.2.2 Offsite Communications

The facility personnel use the telephone system as the primary means of offsite emergency communications. The facility's alternate means of emergency communications with offsite

authorities include the facility radio system. Maintenance and operational testing of primary and alternate communications are described in Section 7.6, Maintenance and Inventory of Emergency Equipment, Instrumentation and Supplies.

6.2.2.1 Telephone System

The facility telephone system provides business and emergency communications. The facility telephone system consists of single line, multi line and programmable digital units. EOC emergency telephones are tested and maintained as described in Section 7.6, Maintenance and Inventory of Emergency Equipment, Instrumentation and Supplies, of this plan.

6.2.2.2 Radio Systems

Radio systems that support the in-facility response have additional capabilities to support offsite communications systems. The radio base station is a desktop model with multi-channel, high band and low band capability. These bandwidths provide the capability to communicate with the hospital, ambulance services, fire department, and state, county and local law enforcement agencies and the New Mexico Department of Public Safety, OEM. NEF will exchange frequency information with each of these agencies.

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7.0 MAINTENANCE OF RADIOLOGICAL CONTINGENCY PREPAREDNESS CAPABILITY

7.1 WRITTEN EMERGENCY PLAN IMPLEMENTATION PROCEDURES

Louisiana Energy Services (LES) develops and maintains a formal set of Emergency Plan Implementation Procedures (EPIPs) applicable to the National Enrichment Facility (NEF). Emergency instructions pertinent to specific accident scenarios and other categorized non-routine operational events are developed and included in the EPIPs. These procedures clearly state the duties, responsibilities, action levels, and actions to be taken by responders identified in Section 4, Responsibilities, in response to an emergency condition. Administrative procedures are established to ensure that individuals and groups assigned responsibilities in an emergency have easy access to a current copy of each procedure that pertains to their functions. Supporting implementing procedures include:

- EOC Activation and Response (contains guidance for:)
 1. Shift Manager/Emergency Director
 2. Operations Support Coordinator
 3. Maintenance Coordinator
 4. EOC Coordinator
 5. Security Coordinator
 6. Health Safety & Environmental Coordinator
 7. Community Relations Coordinator
 8. Communicator
- Emergency Classification
- Emergency Organization (EO)/Offsite Notification
- Evacuation and Accountability
- Release Assessment
- Environmental Monitoring and Sampling
- Recovery.

7.1.1 Development Review and Updating of Plans and Procedures

In accordance with established NEF procedural guidelines, departmental administrative procedures are established which assign responsibility for the development, review, approval, and update of the Emergency Plan and its supporting procedures. The Emergency Plan is reviewed by emergency preparedness personnel for accuracy and updated annually as needed. A decrease in effectiveness review is completed for all proposed changes to the Emergency Plan. Changes to the plan that decrease the effectiveness will not be implemented without prior Nuclear Regulatory Commission (NRC) approval. Changes that do not decrease the effectiveness of the Emergency Plan may be implemented without NRC prior approval provided the changes are submitted to the NRC and appropriate organizations within six months of making the changes. Additionally, any proposed change that affects an offsite organization will be provided to that organization for review and comment at least 60 days prior to the change being implemented, unless mutually agreed otherwise. Revised Emergency Plan and procedures are distributed to all affected parties and will be submitted to the NRC within six months of the revision.

7.2 TRAINING

7.2.1 General Aspects

The NEF training program is designed specifically to train the operating and maintenance personnel in the safe handling of UF₆ and the effective operation of equipment in the NEF. The training consists of both classroom instruction and in-facility training. The specific topics, performance objectives, content, training schedules and number of training hours required for each position are contained in the NEF administrative procedures.

7.2.2 General Employee Training (GET)

General Employee Training (GET) encompasses those Quality Assurance (QA), radiation protection, safety, emergency and administrative procedures established by facility management and applicable regulations. Continuing training is conducted in these areas as necessary to maintain employee proficiency. All persons under the supervision of facility management must participate in GET; however, certain facility support personnel, depending on their normal work assignment, may not participate in all topics. Temporary maintenance and service personnel receive GET to the extent necessary to assure safe execution of their duties. Certain portions of GET may be included in a New Employee Orientation Program.

GET topics are listed below.

- General administrative controls and procedure use
- QA policies and procedures
- Facility systems and equipment
- Nuclear safety (includes the use of dosimetry, protective clothing and equipment)
- Industrial safety, health and first aid
- EIPs
- Facility Security Programs (includes the protection of classified matter and information)
- Chemical Safety
- Fire Protection and Fire Brigade
- New Employee Orientation/Indoctrination

7.2.3 Nuclear Safety Training

Training programs are established for the various types of job functions (e.g., production

operator, radiation protection technician, contractor personnel) commensurate with criticality safety and/or radiation safety responsibilities associated with each such position. Visitors to the Controlled Access Area (CAA) are trained in the formal training program or are escorted by trained personnel while in the CAA.

This training is highlighted to stress the high level of importance placed on the radiological, criticality and chemical safety of plant personnel and the public. This training is structured as follows:

- A. Personnel access procedures ensure the completion of formal nuclear safety training prior to permitting unescorted access into the CAA.
- B. Training sessions covering criticality safety, radiation protection and emergency procedures are conducted on a regular basis to accommodate new employees or those requiring retraining. Topics covered in the training program include:
 - Notices, reports and instructions to workers
 - Practices designed to keep radiation exposures As Low As Reasonably Achievable (ALARA)
 - Methods of controlling radiation exposures
 - Contamination control methods (including decontamination)
 - Use of monitoring equipment
 - Emergency procedures and actions
 - Nature and sources of radiation
 - Safe use of chemicals
 - Biological effects of radiation
 - Use of personnel monitoring devices
 - Principles of nuclear criticality safety
 - Risk to pregnant females
 - Radiation protection practices
 - Protective clothing
 - Respiratory protection
 - Personnel surveys.

Individuals attending these sessions must pass an initial examination covering the training contents to assure the understanding and effectiveness of the training. The effectiveness of the training programs is also evaluated by audits and assessments of operations and maintenance personnel responsible for criticality safety and health physics following the requirements related to the topics listed above.

Newly hired or transferred employees reporting for work prior to the next regularly scheduled training session must complete nuclear safety training prior to unescorted

access into the CAA.

Since contractor employees perform diverse tasks in the CAA, formal training for these employees is designed to address the type of work they perform. In addition to applicable radiation safety topics, training contents may include Radiation Work Permits, special bioassay sampling, and special precautions for welding, cutting, and grinding in the CAA.

These training programs are conducted by instructors assigned by the Health, Safety and Environment (HS&E) Manager having the necessary knowledge to address criticality safety and radiation protection. Records of the training programs are maintained as described in Section 11.7, Records Management, of the Safety Analysis Report (SAR).

- C. Individuals requiring unescorted access to the CAA receive annual retraining. Retraining for individuals is scheduled and reported by means of a tracking system.
- D. Contents of the formal nuclear safety training programs are reviewed and updated as required at least every two years by the HS&E Manager, or designee, to ensure that the programs are current and adequate.
- E. Operational personnel are further instructed in the specific safety requirements of their work assignments by their immediate supervisor or delegate during on-the-job training. Employees must demonstrate understanding of work assignment requirements based on observations by their immediate supervisor or delegate before working without direct supervision. Changes to work procedures including safety requirements are reviewed with operational personnel by their immediate supervisor or delegate.
- F. Radiation safety topics are also discussed and reviewed at least annually in roundtable safety meetings held by supervisors or delegates with their workers, and at other meetings held by managers with their employees.

Additional training is required of emergency response individuals (i.e., any employee who has the potential to staff the EO shown in Figure 4.2-1, National Enrichment Facility Emergency Organization). The additional training provides specific information on how the emergency organization responds during emergency conditions. The training includes such topics as how the EOC is staffed during normal and off-normal working hours, determining and estimating potential offsite releases of radiation and chemicals, and interface with offsite assistance organizations. This training is provided prior to assignment to the EO and refresher training is provided at least once every year.

7.2.4 Offsite Organization Personnel Training

Periodic training is offered to offsite assistance organization personnel in accordance with NEF EPIPs. NEF personnel meet at least annually with each offsite assistance group to accomplish training and review items of mutual interest including relevant changes to the program. This training includes facility tours, information concerning facility access control (normal and emergency), potential accident scenarios, emergency action levels, notification procedures, exposure guidelines, personnel monitoring devices, communications, contamination control, and

the offsite assistance organization role in responding to an emergency at the NEF, as appropriate.

7.2.5 Media and Public Information Training

The emergency public information system will on a periodic basis provide advance and ongoing information to the media and public on subjects that would be discussed during an emergency, such as radiation hazards, chemical hazards, site operation, and elements of the Emergency Plan.

7.2.6 Emergency Preparedness Personnel Training

Emergency preparedness personnel develop, maintain, and update the Emergency Plan. Therefore it is crucial for these personnel to remain knowledgeable and up to date in all aspects of emergency response. These personnel are afforded annual training that may consist of but is not limited to; industry seminars, professional development course instruction, the visiting of similarly licensed facilities, the exchange of audit personnel with similarly licensed facilities, and responsibility cross-training with other emergency preparedness personnel.

7.3 DRILLS AND EXERCISES

Periodic drills and exercises are conducted to test the adequacy of EPIPs, emergency equipment, instrumentation, and to ensure that all emergency response personnel are familiar and proficient with their duties. The Emergency Preparedness Manager is assigned overall responsibility for the planning, scheduling and conduct of emergency response drills for the NEF. Planning, scheduling and conducting emergency response exercises that involve offsite agency response or participation is established by joint agreement with the participating offsite agencies and the Emergency Preparedness Manager.

Drills are primarily internal tests of specific emergency response functions with most other support functions being simulated. Exercises are full-scale tests of most if not all of the EO, and offsite organizations are invited to participate.

The drill and exercise program is established to allow demonstration of the organization's ability to:

- Effectively utilize communication systems to notify offsite agencies and to support emergency response activities
- Effectively use available resources to control the site, and to obtain additional resources when necessary
- Mitigate further damage to the facility
- Control any radiological or hazardous material releases
- Perform required onsite activities under simulated elevated radiation/hazardous material airborne conditions
- Accurately assess the facility's status during emergency conditions
- Demonstrate personnel protection measures both onsite and offsite
- Control and minimize hazards to individuals during fires, medical emergencies, mitigation activities, and search and rescue operations
- Disseminate accurate, reliable, timely and understandable information
- Initiate recovery.

Overall drill and exercise conduct is controlled and evaluated using the following guidelines:

- Exercise scenarios are plausible and are not known by participants in advance.
- Drill and exercise performance is assessed against specific scenario objectives, using postulated accidents that adequately test personnel, equipment, and resources, including any previously identified weaknesses.

- Trained evaluators and independent observers are used to identify and record participant performance, scenario strengths and deficiencies, equipment problems, and to provide recommendations for improvement.
- The pre-staging of equipment and personnel is minimized to realistically test the activation and staffing of emergency facilities.
- Participant, controller, evaluator, and observer pre-drill/exercise briefings are conducted.
- Controllers who maintain the timeline but do not interfere with the emergency organization's response, except where safety considerations are concerned, provide scenario data and exercise messages.
- For those drills and exercises that involve simultaneous activities at more than one location, controllers/observers will be placed at each location.
- Any suspension of security or safeguards measures for site access during an exercise will be pre planned and approved in advance by both the licensee and NRC, as appropriate.
- Post-drill and post-exercise critiques will be conducted by those involved and appropriate improvements will be implemented.

7.3.1 Biennial Exercises

In order to exercise coordination with offsite assistance organizations, including the testing of procedures and equipment for notifying and communicating with local and state agencies, exercises are conducted on a biennial basis. The opportunity to participate is offered to all involved offsite response organizations. The NRC is invited to participate or observe these exercises. A written description of the biennial exercise arrangements and any advance materials are provided to selected controllers, evaluators and official state and federal personnel. This written material also contains criteria for evaluating participant performance. Additionally, the exercise objectives and scenario are submitted to the NRC for review and comment at least sixty days prior to the exercise.

7.3.2 Quarterly Communications Checks

Checks are conducted with offsite response organizations each quarter to verify the operability of initial notification points. Emergency telephone numbers contained in the facility's EPIPs are verified and updated on a quarterly basis by the Emergency Preparedness Manager.

7.4 EXERCISE CRITIQUES

Critiques of all emergency response exercises are conducted by participants and observers (i.e. local, state, federal) as soon after the exercise as possible. Areas evaluated include: the adequacy of the Emergency Plan, procedures, equipment, facilities, personnel training, and overall response effectiveness. The Emergency Preparedness Manager communicates the evaluation and the findings resulting from the exercise in writing to the appropriate offsite officials. Changes (need for corrective actions, etc.) identified are communicated to participating organizations and groups as soon as possible following the exercises. The EPIPs are reviewed after each exercise, against the evaluation findings from the exercise. Exercise evaluations can be very helpful in identifying potential process changes, kinds of material at risk, changes in facility layout, and personnel staffing changes. The Emergency Plan and EPIPs are then revised to reflect any changes deemed appropriate as a result of the evaluation.

The Emergency Preparedness Manager is responsible for tracking deficiencies and ensuring corrective actions are implemented and then verifying through future drills and exercises that those corrective actions were effective.

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